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Board Of Health, Other Professionals Discuss Study On Butte Newborns To Determine Next Steps

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By Matt Vincent

(NOTE: This is a news story covering the December 4, 2019 Butte-Silver Bow Board of Health meeting and follow-up interviews)

"*Health study shows startling levels of metals in Butte babies' meconium*" spanned the front page of *The Montana Standard* on November 26, 2019. (Note: meconium is the first feces passed by a newborn.) The study was conducted by two University of South Carolina, Columbia scientists, Dr. Suzanne McDermott* and Dr. Jamie Lead, and a Montana Tech associate professor, Dr. Katie Hailer, who currently serves as head of the university's Chemistry Department.

Their research asserts that metals – specifically, copper, zinc and manganese – measured more than 1,500 times higher in Butte babies' meconium than those in a group from South Carolina. Because of the small sample size (only 15 babies in Butte were

compared to 17 from Columbia, SC) the study was referred to by Hailer as a pilot or "proof-of-concept" study.

Regardless of its scale, the study has grabbed the community's attention, generating questions and concerns ever since the headlines were printed. Butte-Silver Bow (BSB) Health Director Karen Sullivan confirmed this at a Board of Health meeting last Wednesday morning. She told her board and others in attendance she's been contacted with questions from numerous citizens who are "puzzled" by the study, even "alarmed." They want to know what the results mean and whether they should be concerned.

These concerns and questions led to a request by health board member, Dr. Seth Cornell, M.D. for Sullivan to ask Dr. Hailer to attend the board's meeting in order to discuss her study and answer questions. Hailer's willingness to appear on short notice still attracted a significant audience to the morning meeting, including a number of other government professionals, local officials and a handful of concerned citizens.

A host of credentialed professionals with experience relevant to discussing the meconium study were engaged at the meeting. Sullivan has been the City-County lead on health studies and issues relative to Superfund for the past six years. Dr. Cornell, an M.D. in internal medicine and fellow health board member, Julie Hart, a PhD and Certified Industrial Hygienist, who is the head of Montana Tech's Safety, Health and Industrial Hygiene Program are both following Butte's Superfund progress closely as well.

Additionally, the board and Hailer were joined by EPA's Region 8 toxicologist, Dr. Charlie Partridge from Denver, as well as the State

of Montana's epidemiologist and toxicologist, Laura Williamson and Matt Ferguson, PhD, respectively.

After more than an hour of presentation and discussion, there were a variety of professional perspectives and opinions on what the data from the pilot study may mean. However, one theme was consistent: more data, more analysis and more evaluation are warranted, and the sooner the better.

"I've received a lot of puzzled feedback on the study," Sullivan said. "It was a headline story in our daily (newspaper) and now it's gone national. People are alarmed. Any quick follow-up would be appreciated."

What did the experts say?

The meconium study is the second effort by Hailer to gather metals data from Butte residents and properties in comparison to non-mining/Superfund communities. Both of Hailer's studies have made preliminary conclusions of elevated exposure in Butte's residents; both have advocated for more research and data. The meconium study, coauthored by McDermott and Lead, concluded there is "*an urgent need for further research to understand the mechanisms and human consequences of this potential public health emergency*."

Data and findings from the meconium pilot study were central to a grant proposal submitted to the National Institute of Environmental Health Sciences (NIEH) last June that would have done just that. Though unsuccessful in its quest for funding, the much-larger study would have tracked and compared 175 newborn subjects and their mothers in Butte with an additional

175 pairs in Columbia, SC over five years. The five-year proposal would have cost over $2 million to complete.

"Our original intent was not to publish," explained Hailer to the board, "but to provide a proof of concept to justify the larger proposal." However, Hailer said in an email after the meeting that once she and McDermott saw the difference in metal concentration between the two sites, it was too large for them to ignore.

Even if they had been successful in securing the grant, Hailer said gathering all the data would have taken five years. "We felt it was unfair to not let the community of Butte know about this important work, even with the limitations to the data," she said.

Hailer and her coauthors believe the results of their study show metals exposure in Butte's newborns at startlingly high levels when compared to a similarly sampled group of newborns in South Carolina. The publication also seeks to compare the Butte and South Carolina numbers to metals levels in a number of past meconium studies performed globally.

While no one suggested the preliminary study was nothing to worry about, taking a second, closer look at the data seemed to be the consensus of the group in developing a more measured approach to determine the next, proper steps. Hailer was very cooperative at the meeting when asked about sharing her remaining meconium samples for additional analysis, as well as any other details of the study's methodology "in excruciating detail."

When asked on Friday, EPA confirmed it had sent an official request to Hailer and McDermott for the raw data and remaining

samples of their meconium study. "Dr. McDermott has replied that they will be in contact with EPA shortly to discuss," said Andrew Mutter, Director of Public Affairs for EPA-Region 8 from Denver in an email he sent on behalf of Dr. Partridge. Once received, EPA stated it would take approximately 45 days to review and interpret the data.

"Additionally, if the requested samples are available and useable, EPA intends to work closely with the Superfund Health Study Working Group to determine the best avenue to analyze and interpret those samples," Mutter said.

Sullivan and members of her board, as well as Williamson and Ferguson with the State of Montana, all offered their support in reviewing the study's data further, as well as comparing additional health data and statistics for Butte with the rest of the state.

But it was EPA's Partridge who spoke the most in detail during the meeting. He made multiple references to his team at EPA being committed to looking at the data in greater detail.

"We're still wrapping our heads around it," he said. "We're delving into it much deeper to see if there is such a difference. If there is, then we'll try to figure out why."

One notable point from Partridge's comments during the meeting was his reference to a Canadian meconium study, which he called "the gold standard" by which the Butte and South Carolina numbers should be compared. The Canadian study (Arbuckle, T.E., 2016) referenced by Partridge is also a reference to Hailer and McDermott's publication.

The national study collected maternal blood, umbilical cord blood and meconium from 2,000 pregnant mothers over a four-year period in 10 different "non-contaminated" cities across Canada. More than 1,500 meconium samples were collected from the group and analyzed for cadmium, lead, manganese and mercury. Because of this large sample size and the fact that there were no contaminated areas sampled by design, "the study sheds some light on levels of metals in meconium that one might expect to see in the general population," Partridge explained after the meeting.

Upon review, the only metal analyzed in the Canadian study that can be compared with Hailer and McDermott's data is manganese. McDermott and Hailer's numbers suggested levels of manganese in Butte babies' meconium 1,650 times higher than those found in South Carolina. However, when compared to the 1,591 samples in the Canadian study, Butte's numbers appear to be practically on par. Butte's median concentration of manganese is only ten percent higher than the Canadian study's, while the maximum value found in Canada is more than twice as high as in Butte.

Conversely, the same data would imply that the levels of manganese found in the South Carolina samples are more than 1,000 times lower than the Canada baseline. Yet McDermott and Hailer's study states the South Carolina numbers "*are similar to levels reported in other studies of meconium*."

When attempts were made to ask Hailer and EPA about this apparent discrepancy, the parties were either unavailable or unwilling to confirm, respectively. EPA did offer the following statement when asked about its opinion of a comment Dr. Hailer made during the health board meeting that she and her fellow

researchers were confident they had made "no mistakes" in their study.

"It would be inappropriate for EPA to speculate without having reviewed all the data, but please be aware, close scrutiny of data that have potential public health implications (including our own) is standard practice. EPA continues to review various aspects of the report along with Agency for Toxic Substances and Disease Registry (ATSDR) and state and local partners."

One of the local partners Partridge refers to is the Superfund Health Study Working Group, part of an effort in Butte to perform health studies every five years to assess how well the EPA-mandated cleanup programs are protecting locals from the heavy metals left over from historic mining. Sullivan plays a vital role in these regards.

"I am really excited about Butte's future through these Superfund processes," Sullivan said near the end of the meeting. "I'm fired up, yet I remain concerned with studies that show potential exposure and we need to keep digging."

DISCLOSURES**

Story reporter Matt Vincent* is the former Chief Executive of Butte-Silver Bow and a Montana Tech graduate (B.S. Chemistry 1996). He has worked on the Butte/Upper Clark Fork Superfund sites in a variety of capacities since 1995. In addition to his work as a freelance journalist for The Butte Weekly, he is also a professional/environmental consultant who owns Rampart Solutions, LLC. One of his clients is Montana Resources.

Dr. Suzanne McDermott* is a professor of Epidemiology and Biostatistics and a director in the University of South Carolina, Columbia's Arnold School of Public Health. Her son, Ted McDermott, is a former assistant editor and reporter for *The Montana Standard*. Ted was employed at the *Standard* from April 2018 up until July 2019 when he accepted a similar position at *The Spokesman Review* and moved his young family to Spokane, WA. He was working as a *Standard* editor-reporter in August 2018 when the newspaper began its reporting on Dr. McDermott's research focusing on Butte.

PHOTO CUTLINE: Montana Tech's Dr. Katie Hailer (top left) listens to questions and comments at the Butte-Silver Bow board of health meeting on December 4, 2019. Health director Karen Sullivan is seated on the right, while John Rolich, environmental health director takes notes. Hailer and two South Carolina researchers recently published a pilot study that concludes very high levels of certain metals in the meconium of a small sample of Butte babies. (Matt Vincent photo).

Butte Baby Doc Offers His Insights On What To Make Of Recent Meconium Pilot Study

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In an effort to provide some well-trusted — and hopefully calming — perspective to Butte's mothers and families in the wake of a recently released pilot study on metals levels in Butte babies' meconium, I interviewed Dr. George Mulcaire-Jones, M.D.

George is an East Helena native and is a board-certified doctor in Family Medicine specializing in OB/GYN care with over 35 years of experience. He has spent 28 years practicing in Butte, where he's raised his family. He estimates if he includes his training and the volunteer work he's done in Africa that he's delivered over 3,000 babies. Doctor Mulcaire-Jones has reviewed the study as well as read the newspaper stories covering it.

"I think it warrants a much more thorough, sophisticated, in depth study," he said of the results. "There are a lot of questions: where is the copper, manganese and zinc coming from? Are the metals in the mother's hair? Are they in the cord blood? Are they in the mother's blood? Really, that's the only way it can end up in the baby's meconium, it has to go through the mother."

And because the study did not collect information on the mothers, he noted that as another limitation of the study. "There's not a way to tell if the mothers were even from Butte. They could be from Anaconda, Rocker, Deer Lodge," he said, indicating another reason for more study.

Dr. Mulcaire-Jones also discussed the meconium study results in the context of a baby's "first 1,000 days of life," an initiative he's been part of in Butte working with the Montana Healthcare Foundation to help educate pregnant mothers for the health's sake of their babies.

"The first 1,000 days of a baby's life are the most vulnerable in a baby's development," he explained. "As a mother, you want to strive to minimize as many risks as you can in this time period and to make it as healthy as possible for the child."

In that context, he wondered about mothers worrying whether it was safe to have their babies in Butte. "There could be a lot of those type of irrational decisions with fear-based presentation of data."

When asked about the study's conclusions referring to a "potential public health emergency," he didn't mince words. "I think it is extremely tenuous to draw those sorts of conclusions from such little data."

He explained that coming from East Helena, a Superfund site where a former lead and zinc smelter rained down heavy metals contamination on the small town, citizens used common sense to reduce their risks to exposure, "whether they were real or perceived." He noted things like washing your food and vegetables from outside, washing your hands before you eat, not smoking.

Coincidentally, at the last meeting of the Butte-Silver Bow Board of Health, board member Dr. Seth Cornell, an internal medicine M.D., also mentioned the value and need for citizens to understand the steps they can take to protect themselves from environmental metals exposure and the impacts that might come with it.

He offered the following tips: Take your shoes off before coming inside. Not only wash your hands, but make sure you wash your pets if they spend a lot of time outdoors. Call the Butte Residential Metals Abatement Program (497-6278) to have your house and yard sampled for lead and arsenic levels.

Also, along these lines, there is a publication that was developed by Montana Tech liberal studies professor Dr. John Ray called, "Be Contaminant Smart." This simple pamphlet outlines in much greater detail all of the things a citizen can do to protect him/herself from unnecessary exposure to metals and it's available at the Health Department located at 25 West Front Street.

(Photo credit, Maternal Life International)